

## EVIDENCE OF DUAL BREEDING RANGES FOR THE SEDGE WREN IN THE CENTRAL GREAT PLAINS

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ABSTRACT.—Sedge Wrens (*Cistothorus platensis*) are very rare breeders in the central plains states but show a pattern of mid-summer arrival dates. I examined their status in central Nebraska in August 1994 by conducting six Breeding Bird Survey routes and by searching suitable habitat. I recorded Sedge Wrens on three of the six survey routes. Most wrens occurred on sub-irrigated native meadows, but a variety of grassland types were used. Most clutches were initiated by the second week of August. Observers should be aware of the potential for late-summer breeding in other portions of their range. *Received 22 Mar. 1995, accepted 15 Aug. 1995.*

Although the breeding range of the Sedge Wren (*Cistothorus platensis*) includes much of the midwestern and northeastern United States (AOU 1983), it is apparently common and widespread only in the upper mid-west, e.g., Minnesota (Janssen 1987) and Wisconsin (Robbins 1991). In much of the remainder of their breeding range in the United States, Sedge Wrens are rather rare, local, and erratic in occurrence. The breeding status of the Sedge Wren is an enigma as there are few or no nest records in many areas, combined with peculiar mid- to late-summer arrival dates. Such is the case in Alabama (Imhof 1962), Arkansas (James and Neal 1986), Kansas (Thompson and Ely 1992), Kentucky (Mengel 1965), Missouri (Robbins and Easterla 1992), Nebraska (Lingle and Bedell 1989), and Tennessee (Robinson 1990). McNair (1983) discussed summer occurrences of Sedge Wrens in the southeastern states and questioned whether these records indicate possible breeding activity. Late-summer breeding may occur in areas where wrens are absent in early summer, although nest records are very few. This phenomenon has been observed in Arkansas (Meanly 1952), Kansas (Schwilling 1982), and Nebraska (Lingle and Bedell 1989). Coincident with mid-summer arrival dates in more southerly areas is a “shifting about” in and out of nesting territories during mid-July in Minnesota (Burns 1982) and Illinois (Kroodsma and Verner 1978).

Sedge Wrens are highly opportunistic breeders that show little or no site fidelity (Walkinshaw 1935, Burns 1982), probably due to habitat instability (Kroodsma and Verner 1978). The ephemeral nature of wet grassland and marsh edge habitat dictates that species breeding in these habitats should be good dispersers (Remsen and Parker 1990). Some populations of Sedge Wrens are double-brooded (Burns 1982), and they are polygy-

nous (Crawford 1977). Males build multiple nests which may be used for courtship activities, dormitories, or predator decoys (Burns 1982) and which are referred to in this study as dummy nests. One of these nests is lined and used by the female as a brood nest. However, nest building by males does not in itself prove breeding, as they may not attract a mate (Crawford 1977, McNair 1983).

In order to determine if territorial Sedge Wrens occurred in suitable habitat in late summer throughout central Nebraska, I censused selected Breeding Bird Survey (BBS) routes in August for the presence or absence of wrens. I also checked suitable habitat on a random basis in August and compared this to atlas data, nest records, and local ornithological literature. Clutch data came from this study and from field work which I conducted during the summers of 1988–1992 in Hall County, Nebraska.

#### METHODS

Previous field work in the Platte River valley indicated that in August Sedge Wrens often occur in the same type of wet meadows favored by Bobolinks (*Dolichonyx oryzivorus*). Therefore, I chose BBS routes based on relatively high numbers of that species. The chosen BBS routes had no previous records of Sedge Wrens. The mean numbers of Bobolinks per BBS route conducted from late May through mid-June from 1967–1992 were provided by the Breeding Bird Survey (B. Peterjohn, unpubl.). I also chose routes based on geographic coverage of central Nebraska and the Sandhills region. I conducted Nebraska BBS route numbers 007, 018, 026, 029, 041, and 116, between 8–14 Aug. 1994 and recorded the presence or absence of Sedge Wrens at half-mile intervals. I compared August Sedge Wren occurrence to June Bobolink occurrence at identical BBS survey stops with a Chi-square test (Ambrose and Ambrose 1987).

I also checked suitable habitat for the presence of Sedge Wrens throughout the central Nebraska area from 2–23 Aug. 1994 by stopping and listening from the roadside as I travelled. Several locations were reported by other observers. This area was bounded approximately by the Platte River valley, 102°W. Longitude in Cherry and Keith Counties, 98°W. Longitude in Hamilton County, and the South Dakota border. BBS routes were in Nebraska counties Buffalo, Cherry, Holt, Loup, and Wheeler. When access permitted, I searched for nests by first observing the birds, then by carefully pushing aside the vegetation as I walked through their territories.

I categorized wrens in a ranking of probable breeding evidence: (A) singing in suitable habitat, (B) nest building or dummy nests observed, (C) nest with eggs or adult feeding young. Because Sedge Wrens can build nests yet remain mateless, I considered breeding to be confirmed only when nests with eggs or offspring were observed or adults were observed carrying food. Clutch initiation was defined as the date the first egg was laid. Backdating a clutch to initiation was determined as one egg laid per day until clutch completion, thirteen days for incubation, and another fourteen days until fledging (Walkinshaw 1935, Burns 1982, pers. obs.).

Locations were marked on county maps and compared to Nebraska Breeding Bird Atlas data (Molhoff, unpubl.) and to June breeding records from state literature (Bruner et al. 1904, Cink 1973).

TABLE 1  
NUMBERS OF SEDGE WRENS RECORDED ON BREEDING BIRD SURVEY (BBS) ROUTES IN  
NEBRASKA

BBS route number <sup>a</sup>	# Years run 1967-1992	Total June occurrences	August 1994
001	24	2	—
022	17	2	—
007	23	0	1
018	11	0	0
026	18	0	2
029	20	0	0
041	3	0	0
116	3	0	10

<sup>a</sup> Rows 001 and 022 are in northeastern Nebraska; routes 007, 018, 026, 029, 041, and 116 are in central Nebraska.

## RESULTS

Three of the six BBS routes had Sedge Wrens singing on territories in August despite no previous June records. Only two BBS routes in Nebraska have ever reported Sedge Wrens, and then only rarely from the eastern border of the state. These records are from routes #001 in Otoe County, with individual reports in two out of 24 years, and #022 in Thurston County, also with individual reports in two out of 17 years (Table 1). I found no wrens in the central or western Sandhills region even though there appears to be much suitable habitat. Sedge Wrens occurred in this study only east of 100°W. longitude.

Even though the highest incidence of Bobolinks and Sedge Wrens occurred on the same route, there was no significant association between survey stops that recorded Bobolinks in June and identical stops that recorded wrens in August ( $\chi^2 = 2.25$ ,  $df = 1$ ,  $P > 0.05$ ).

Seventeen additional sites with territorial Sedge Wrens were located in August 1994, mostly in sub-irrigated native meadows of the Platte River valley (Table 2). But one site was on Conservation Reserve Program (CRP) land idled for one season. Another site was on a three-year old dry 1.2 ha. native prairie planting. This prairie restoration site in Hamilton County, Nebraska, contained an active nest initiated on 9 August 1994.

Nine additional nests were discovered at Mormon Island Crane Meadows (MICM) in Hall County, Nebraska, in August 1989 and 1992. Two more nests in central Nebraska are described by Lingle and Bedell (1989) from August 1988. Most of these twelve clutches were initiated by the second week of August (Fig. 1). In addition, an adult wren with four

TABLE 2  
HABITAT USE BY SEDGE WRENS IN NEBRASKA DURING AUGUST 1994

Habitat	Occurrences		
	A	B	C
Subirrigated native meadow	6	3	1
Other wetlands	3	0	0
Prairie restoration and CRP land	2	0	1
Upland prairie	0	0	1

recently fledged young were reported from Buffalo County, Nebraska, in an upland prairie on 26 September 1994 (G. Lingle, pers. comm.).

#### DISCUSSION

Since Sedge Wrens can easily be overlooked, there is a possibility that they are present in these areas in early summer but delay the onset of breeding. This is unlikely due to the paucity of atlas, BBS, and other published records over many years. Stronger evidence of their early-summer absence comes from the Mormon Island Crane Meadows where ten

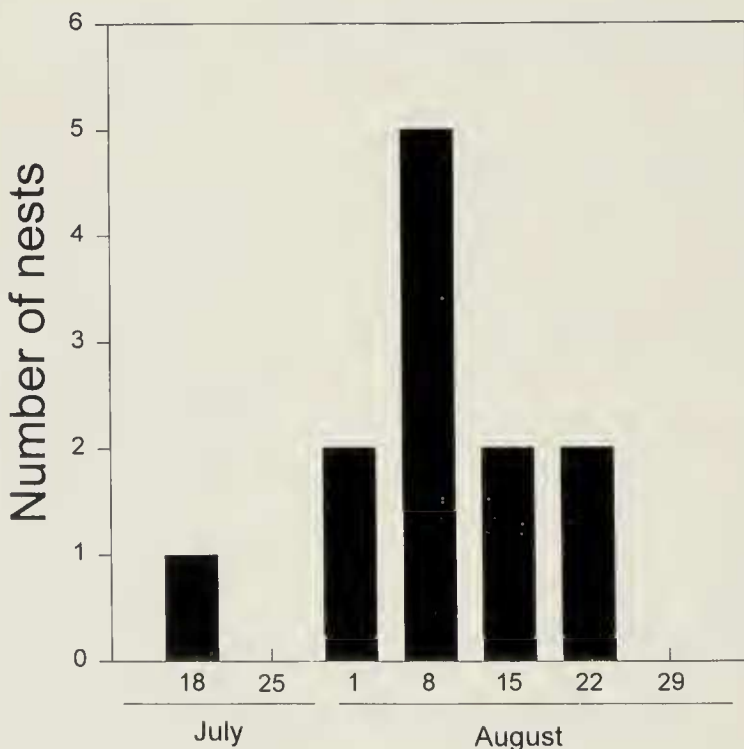


FIG. 1. Sedge Wren clutch initiation dates by week in Nebraska.



of the twelve active nests were located. Thirteen years of Breeding Bird Census studies conducted between 1980 and 1994 at MICM between 23 May and 20 June have recorded only single males in 1990 and 1994, and there are no records prior to June.

Although most wrens occurred on native wet grasslands, they showed a range of adaptability from partly flooded sites to dry prairie. The active nest in Hamilton County was on a dry level site devoid of any wetland vegetation. The adult with fledglings in Buffalo County was seen on a dry upland prairie. The Conservation Reserve Program (CRP) site was characterized by a rank growth of annuals up to 3 m in height. Sedge Wrens have also been recorded as using CRP lands in the Dakotas and Minnesota (Johnson and Schwartz 1993). Vegetative growth of at least 0.5 m was common to all sites.

The standard breeding phenology of most avian migrants includes a spring migration to a breeding region, establishment of a breeding site and raising offspring, and a return migration. The only North American migrant bird species known to possibly deviate from this pattern by utilizing dual breeding ranges is the Phainopepla (*Phainopepla nitens*) (Walsberg 1977). Phainopeplas breed in the Colorado Desert of California in March and April, then apparently migrate and renest in coastal oak woodlands from May through July. However, there is no direct evidence of this. The evidence for dual breeding ranges for Sedge Wrens is also conjectural in that there is no proof that they have first nested elsewhere before appearing in the central plains states in July and August. But the circumstantial evidence is compelling. The period of "shifting about" described by Burns (1982) and Kroodsmas and Verner (1978) coincides with the arrival of Sedge Wrens in the central plains and in other states. The ephemeral habitat and low philopatry indicate a need and the ability for undertaking this highly unusual breeding strategy. The high mobility of Sedge Wrens may not be unique. There is an intriguing report of Yellow Rails (*Coturnicops noveboracensis*), which nest in similar habitat, nesting in late August in North Dakota (Lambeth 1994).

The breeding range of the Sedge Wren includes eastern Nebraska (Johnsgard 1979) and eastern Kansas (Thomson and Ely 1992), but this is based on very little actual evidence. A survey of historical early-summer breeding records from local ornithological literature, Nebraska Breeding Bird Atlas data (Molhoff, unpubl.), and the N.A. Nest Record program revealed only two June records of active nests in Nebraska (Bruner et al. 1904, Cink 1973). There are no June breeding records from Kansas and only two Kansas BBS routes, 020 in Barton County and 026 in Jefferson County, have reported Sedge Wrens, with a combined historical total of six birds. Schwilling (1982) described two active nests and recently

fledged young from Atchison County, Kansas, from August 1980. There is one North American nest record card of a probable dummy nest for Nebraska and none for Kansas. There are a handful of additional records of singing birds in appropriate habitat that possibly represent breeding activity (Cink 1973, Labeledz 1984). Recently, July–August records in the Platte River valley of Hall County in central Nebraska indicate a regular mid-summer migration and nesting season in an area where they are largely absent until mid-July (Bedell 1987, Lingle and Bedell 1989). Observers have become aware of the influx of Sedge Wrens into the area in mid-summer where they have been recorded in numerous locations (Bedell 1987, Clausen 1989). A similar phenology has been noted for the Konza Prairie near Manhattan, Kansas (Zimmerman 1993). The breeding status of Sedge Wrens on the Konza Prairie has yet to be determined, where they occur annually in drainages that have ample stands of *Spartina*. When I visited the area on 25 Aug. 1994, I failed to find any activity, although wrens were present through at least 17 Aug. (J. Zimmerman, pers. comm.).

If Sedge Wrens have indeed first bred elsewhere in their range, then where are they coming from and why risk the hazards of migration? There seems to be little benefit for individuals that may have been successful in raising a first brood on a good territory to undertake the risks inherent in migration and of establishing another territory, so this migration should consist of individuals that accrue benefits in fitness that offset the costs. A possible explanation may be that because of the incidence of simultaneous polygyny (19% in Crawford 1977), bachelor males migrate to secondary areas such as the central plains anticipating a possible influx of females. If changing habitat conditions force Sedge Wrens to search for new territories in mid-season, these males would have an advantage, and the females would have an established territory to quickly move into. But if habitat conditions in the primary range remain favorable, few if any females may undertake this mid-summer migration. This may explain the lack of breeding evidence in some summers in Nebraska and elsewhere. Another good possibility is that they originate from the northern portion of their breeding range where a shorter season prevents them from raising a second brood. Or, perhaps these are individuals that occupied marginal territories which became unsuitable by July. This interesting problem certainly deserves further study.

If Sedge Wrens expand their breeding range into the central plains states in late summer, the same phenomenon should occur in other areas considered beyond their normal range. To understand the extent of this breeding range shift will require other observers to be aware of this possibility, and to take a closer look at the occurrence of late-summer Sedge

Wrens. This aspect of their breeding strategy needs to be determined for any understanding of the status of this possibly declining species.

#### ACKNOWLEDGMENT

This research was supported by the Margaret Morse Nice award of the Wilson Ornithological Society and the E. A. Bergstrom fund of the Association of Field Ornithologists. Bruce Peterjohn provided data and maps from the Breeding Bird Survey program. Gary Lingle of the Platte River Whooping Crane Habitat Maintenance Trust and Bill Whitney of the Prairie/Plains Resource Institute provided helpful information on field locations and permitted property access. Wayne Molhoff provided data gathered during the Nebraska Breeding Bird Atlas project. C. Blem, G. Lingle, and J. Zimmerman provided helpful comments on earlier versions of the manuscript.

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